Advanced Scintillating Fiber Technology in High Energy Neutron Spectrometers for Exploration

Completed Technology Project (2013 - 2016)

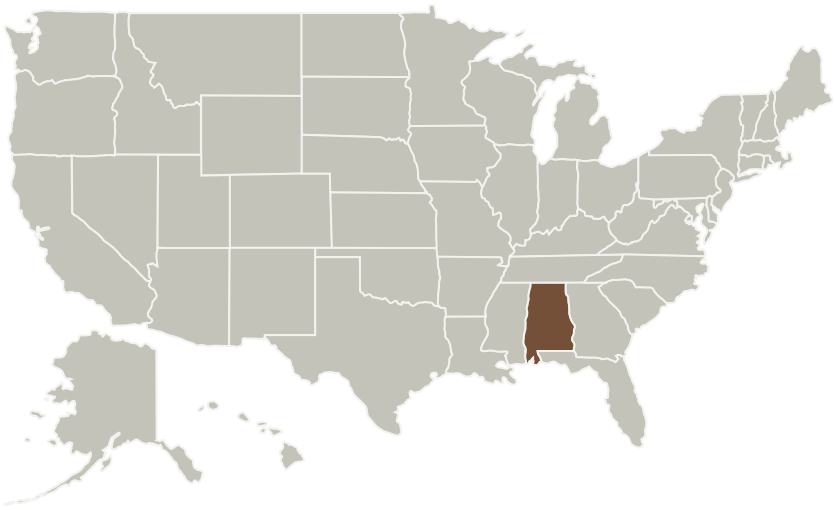
Project Introduction

High energy neutron spectrometers are being developed to measure the energy spectrum of neutrons, which are a component of the space radiation environment. Energetic neutrons are harmful to space systems and space crews in unique ways. To quantify these harmful effects it is necessary to identify the neutron component in the space radiation environment and measure its energy spectrum. The key to this measurement is identifying the neutron. We will develop new scintillating optical fiber technology that greatly improves the identification of neutron-capture signals over the current state-of-the-art. These fibers will be embedded in a large plastic scintillator to create a neutron detector. This detector will be tested in a simulated spacecraft radiation environment to demonstrate the performance of these fibers as neutron identifiers.

Anticipated Benefits

This project is developing cew scintillating optical fiber technology that greatly improves the identification of neutron-capture signals over the current state-of-the-art.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
University of Alabama in Huntsville(UAH)	Supporting Organization	Academia	Huntsville, Alabama

Project Image Advanced Scintillating Fiber Technology in High Energy Neutron Spectrometers for Exploration

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Responsible Program:

Space Technology Research Grants

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Primary U.S. Work Locations

Alabama

Images

11963-1363027228731.jpg
Project Image Advanced Scintillating Fiber Technology in High Energy Neutron Spectrometers for Exploration
(https://techport.nasa.gov/image/1692)

Project Website:

https://www.nasa.gov/directorates/spacetech/home/index.html

Project Management

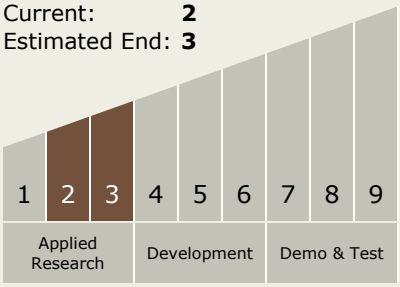
Program Director:
Claudia M Meyer

Program Manager:
Hung D Nguyen

Principal Investigator:
James Adams

Technology Maturity (TRL)

Start: **2**
Current: **2**
Estimated End: **3**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.5 Radiation
    - TX06.5.5 Monitoring Technology